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TITLE: PLANE LIGHT-EMITTING PANEL MEMBER

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INVENTOR-INFORMATION:

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ABSTRACT:

PROBLEM TO BE SOLVED: To provide a plane light-emitting panel member that can be directly installed on the roof or outer wall of a building facilities or the like and can be charged sufficiently in a short time and can illuminate the building or facilities space for a long time with uniform illuminance.

SOLUTION: The plane light-emitting panel member comprises a plane light-emitting panel body which has many partitions made of non-translucent material and in which the inner wall of the partition is applied reflection processing and an **LED** light source is provided on one of the partition walls, and a light control plate is provided at the bottom of the **LED** light source, and a reflection aid plate is formed on the facing partition inner wall, and further a transmitting plate for scattering or retro-transmitting is jointed at

the bottom. And on top of it, an appropriate number of flat electric double-layer **capacitors** are provided, and a parallel monitor circuit is connected to each electric double-layer **capacitor**. And a charging unit with a switching convertor on the input side and output side and, on top of the charging unit, a **solar** light generating panel which is transparent on the surface side and in which a **solar** cell module is sealing filled and adhered by a transparent acrylic resin anaerobic adhesive in the middle position between two clipping plates are **laminated** and fixed integrally by a frame body.

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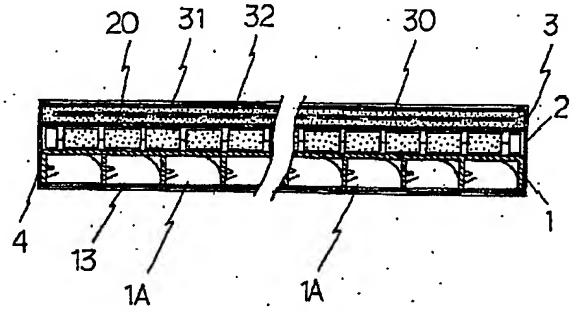
(54)【発明の名称】　面状発光パネル材

(57)【要約】
【目的】　建物施設等の屋根や外壁に直接張設させ短時に十分な蓄電をなさしめ、且長時間に亘って建物や施設空間を均質な照度で照明できる面状発光パネル材を提供する。
【構成】　不透光性素材で多数の区画を有し且その区画内壁面に反射加工が施され、而もその区画壁面の一側にＬＥＤ光源が設けられ更に該ＬＥＤ光源の下部位に調光板が、及び対向区画内壁面には反射促進板が形成され而も下部には散乱若しくは再帰透過させる透過板材が接合された面状発光板体の上面には、扁平状の電気二重層キャパシタが適宜数配設され、且それぞれの電気二重層キャパシタには並列モニター回路が連結され而も入力側及び出力側にはスイッチングコンバーターが介された蓄電体と、該蓄電体の上面には表面側が透明で且二枚の挟持板材の中間部位に太陽電池モジュールが透明アクリル樹脂嫌気性接着剤で密封充填接着された太陽光発電板体とが、枠体により一体的に積層固定された構成。



1

【特許請求の範囲】

【請求項1】　不透光性素材で所定の空間容積に形成された多数の区画を有し、該区画内壁面が適宜の反射材で積層され若しくは塗着され、且その区画壁の一側にはＬＥＤ光源が設けられてなるとともに、該ＬＥＤ光源の光線が区画内壁面で一旦反射されるようＬＥＤ光源の下部位には適宜勾配を以って調光板が設けられ、而も対向区画壁面には光線を再反射させ下方照射を図る反射促進板が形成されており、且それぞれの区画より照射される光線を散乱透過若しくは再帰透過させる透過板材が接合されてなる面状発光板体と、該面状発光板体の上面には所要時間該面状発光板体が発光照射できる蓄電容量を保持するよう、扁平状の電気二重層キャパシタが適宜数配設され且それぞれの電気二重層キャパシタには並列モニター回路が介され、而も面状発光板体からの蓄電のための入力側及び放電のための出力側にはスイッチングコンバーターが介されてなる蓄電体と、更に該蓄電体の上面には少なくとも表面側が透光性素材からなる二枚の狭持板材の中間部位に、太陽電池セルが所要数配列結線された太陽電池モジュールが透明アクリル樹脂嫌気性接着剤により狭持板材と密封充填接着された太陽光発電板体とが適宜枠体により一体的に積層固定され、且その周縁に耐水加工が施されてなることを特徴とする面状発光パネル材。

【請求項2】　面状発光板体と蓄電体が枠体により一体的に積層固定されてなり、且太陽光発電板体の周縁に枠体が設けられたうえ耐水加工が施されてなる請求項1記載の面状発光パネル材。

【請求項3】　面状発光板体の区画内の対称的二区画内壁面にはそれぞれＬＥＤ光源が設けられ、且相互のＬＥＤ光源からの発光光線を反射させ下方照射させる反射促進板がそれぞれ形成されてなる請求項1若しくは請求項2記載の面状発光パネル材。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は太陽電池モジュールで発電した電力を効率よく蓄電させたうえ、所要の照明空間に合せて適宜に配設でき且均質な照度を以って照明のなしえる面状発光パネル材に関する。

【0002】

【従来技術】産業活動はもとより生活活動においても電力は極めて重要不可欠のエネルギーであって、産業規模の拡大並びに生活水準の向上とともにその消費量も膨大量に昇っており、既にその一次エネルギーたる石炭や石油においてはその資源枯渇と且その使用に伴い排出される煤煙や排ガスによる環境汚染の拡大等とが相俟って早くから代替エネルギーの模索がなされてきており、その一部が原子力エネルギーへ代替されつつあるものの原子力エネルギーへの転換はその安全性が危惧され、一旦事故が発生すると大惨事に至ることが必至であり且国内に

2

おいても再々に亘って大惨事が予想される事故が頻発している等、狭少な我が国においては安全性の確保のために数多の未解な問題を抱えている。

【0003】他方において将来のエネルギー確保手段として太陽光エネルギー利用による太陽電池を初め、風力エネルギーを利用した風力発電或いは海洋の波力を利用した波力発電等も古くから研究がなされてきたものの、技術的問題に加えて特に経済性の問題を依然として抱えている。とりわけ太陽光エネルギーを利用した太陽電池は、半導体技術やセラミックス技術の著しい向上とも相俟って多くの技術的問題が解決されつつあり、これがため太陽光エネルギー利用による太陽電池や太陽光発電については自然エネルギーの利用促進のための促進政策に伴って、産業目的及び居住目的として太陽光発電装置が普及されつつあるものの経済性には依然として多くの問題を抱え、これが本格的普及を阻害している。

【0004】発明者はかかる問題に鑑み鋭意研究を重ねた結果、太陽電池セル若しくはモジュールの起電力発生は日照度合により大きく変化するものであるから、大きな起電力の発生時に即時に蓄電しえる蓄電装置を用いぬと照明に供しえる十分な電力が供給できず、従って過大な蓄電装置を設置せねばならぬことばかりか長時間に亘る起電と蓄電をなす必要があることや、仮令太陽光エネルギーによる発電装置を採用する場合においても太陽光発電に係る太陽電池セル若しくはモジュールは極めて脆弱であるから、該セルやモジュールは日照場所に且外的衝撃を防護し且耐水性を施してなる太陽電池モジュールボックスを立設してその内部に配設させる必要があり、更には照明器具の設置場所までの配線等付帯工事費や設備費も高価なものが強いられる実情にある。

【0005】更に現状の照明手段は専ら電球による点発光や蛍光灯の如き線発光であるから、建物空間内の照度は点発光や線発光からの距離により二乗分の割合で低下するため、今日の如く産業上においても生活上においても多用されてなる情報機器類の操作作業上の適正照度のうえからは大きな問題となりつつあり、これがためには面発光による照明手段が強く求められている。

【0006】そこで発明者は、太陽電池セル若しくはモジュールを少なくとも一方が透光性を有する二枚の狭持板材の中間に透明接着剤で密封充填接着させて太陽光発電板体とすることにより、耐衝撃性や耐水性が保持されて屋外での曝露使用ができ、且扁平な電気二重層キャパシタを多数配設することにより全体的に薄く而も短時に大容量の蓄電が可能となること、及び光源にＬＥＤランプを用い多数の区画内で反射させ且散乱若しくは再帰透過させることにより、面光線による照明が可能なることを究明し本発明に至った。

【0007】

【発明が解決しようとする課題】即ち本発明は建物、施設等の屋根や外壁に直接張設させて短時に十分な蓄電を

なさしめるとともに、長時間に亘って建物や施設空間を均質な照度で照明することの出来る面状発光パネル材を提供することにある。

【0008】

【課題を解決するための手段】上述の課題を解決するためには、太陽光により発電した電力を短時に蓄電し且面状光線として照明のなしえる一体化した構成が要請される。そこで本発明においての照明手段としては面状発光板体の構成を用いるもので、該面状発光板体は光源として低電力高輝度のＬＥＤ光源を使用し、該ＬＥＤ光源からの発光光線を所要の区画内で反射させて面状光線となすために、不透光性素材を用いて全体形状が薄形扁平状で且所要の区画容積を有する多数の区画を形成させ、該区画内壁面にはＬＥＤ光源からの発光光線を反射させて面状光線となすために適宜の反射材を積層させ若しくは塗着させるとともに、この区画壁のそれぞれ一側面にはＬＥＤランプからなるＬＥＤ光源が設けられており、且ＬＥＤ光源の発光光線が直接外方に逸散されぬよう該ＬＥＤ光源の下方には適宜の勾配を以って調光板が設けられている。加えて該ＬＥＤ光源が設けられた区画壁面の対向側には、ＬＥＤ光源からの発光光線を効率良く再反射させるための反射促進板が設けられている。更にＬＥＤ光源で発光させた光線を区画内壁や反射促進板で反射させて面状光線化させたうえ、該面状光線を散乱若しくは再帰透過させて均質な照明を図るうえから、その下面には光散乱若しくは再帰透過させる透過板材が接合されて面状発光板体を構成している。

【0009】そしてかかる面状発光板体の上面には、全体が薄肉扁平状に形成され太陽光により顕著に変化する発電力を短時間内に十分に蓄電して、該面状発光板体を所要の時間に亘って点灯照明をなさしめるための電気二重層キャパシタが所要数配設されてなり、且この所要数配設されるそれぞれの電気二重層キャパシタにはそれぞれ均等に蓄電がなされるよう、スイッチングコンバーターよりなる昇圧コンバーターをその入力側に、且出力側には降圧コンバーターを介し而もそれぞれの電気二重層キャパシタには、それぞれ並列モニター回路が設けられて蓄電体を構成している。

【0010】加えてかかる蓄電体の上面には太陽光線と受光により所要の起電力を発生させて蓄電体に電力を供給せしめるとともに、外部衝撃による太陽電池モジュールの保護と屋外曝露においての耐久使用性と耐水性を保持する太陽光発電板材が配設されている。この太陽光発電板材は少なくともその表面には透光性素材を用いた二枚の挟持板材の中間部位に、太陽電池セルを所要数配列結線させた太陽電池モジュールを透明アクリル樹脂嫌気性接着剤を用いて相互を密封充填接着させた構成からなるものである。

【0011】かくして面状発光板体上面に蓄電体が配設され且その上面に太陽光発電板体とが配設された周縁部を枠体により挟着せしめることにより、これらを一体的に積層固定させ且その周縁に耐水加工を施した構成としている。更に一般的居住建物の照明や事務所、店舗建物等の照明設備は建物の屋根や外壁より離れた建物内部に形成されるものであるため、かかる照明に対処するうえからは面状発光板体と蓄電体とを枠体により一体的に積層固定させ、且太陽光発電板体の周縁に枠体を形成させ而もその周縁に耐水加工を施して独立させた構成となしている。加えて本発明においては高照度の照明に対処するうえから、面状発光板体の区画壁の対照的二壁面にそれぞれＬＥＤ光源を設けた構成を用いている。

【0012】

【作用】本発明は上述の如き構成を用いてなるため以下のような作用を有する。即ち本発明は面状発光板体と蓄電体及び太陽光発電板材とが一体的に積層固定され、且その周縁に耐水加工が施された扁平パネル状に形成されてなるから、工場や倉庫、物置、ガレージ、仮設建物等には屋根材として直接使用でき且下方の面状発光板体からは照明がなされるため付帯電気設備や工事等が一切削減される。そして表面側の太陽光発電板体は強靭で且少なくとも一方が透明な二枚の挟持板材を用い、その中間位置に太陽電池モジュールを透明アクリル樹脂嫌気性接着剤を以って相互が密封充填接着されるため極めて強固となり、風雨や降雹はもとより飛来物の衝突等に際しても太陽電池モジュールが確実に保護されるとともに湿気や雨水の侵入も防止される。加えて日照条件が複雑に変化しても電気二重層キャパシタが多数配設され、且該電気二重層キャパシタの入力側にはスイッチングコンバーターからなる昇圧コンバーターが介され且出力側には降圧コンバーターが介されてなるから、蓄電に際して電流入力ポンプ及び電流出力ポンプの作用が働き良好な蓄電と放電がなしえ、而もそれぞれの電気二重層キャパシタには並列モニター回路が設けられてなるから、極めて短時間内にそれぞれの電気二重層キャパシタ内に均質に且効率良く蓄電がなされることとなる。

【0013】加えてその出力負荷となる面状発光板体は、多数に区画された区画内壁面が反射材で積層若しくは塗着され、且ＬＥＤ光源が設けられてなるため小電力で高輝度の発光がなされるとともに調光板や反射促進板とにより区画内壁面で複雑に反射されて面状光線となり、而も該面状光線が散乱若しくは再帰透過されて照射されるため区画壁相互の陰影が消去され、建物空間全体が均等な照度で照明がなされる。更に本発明では面状発光板体と蓄電体が一体化され且太陽光発電板体を独立して屋根材や外壁材として使用でき、且その起電力を通電線で蓄電体に蓄電させることで建物内のあらゆる場所の照明もなしえる。

【0014】

【実施例】以下に本発明実施例を図とともに詳細に説明すれば、図1は本発明の断面説明図、図2は面状発光板

体の部分拡大説明図であって面状発光板体１は建物や施設等の空間を所要の照度を以って照明するためのもので、更に詳しくは建物や施設等の屋根や外壁に直接張設せしめて発電し且空間内を均質な照度を以って照明を図ることにある。これがためには使用する素材としては強靭性や軽量性或いは耐熱性とともに多数形成される区画１Ａ内で発光源からの発光光線を漏出させずに反射させて面状光線となすうえから不透光性素材が望ましく、具体的素材としてはポリカーボネート樹脂、ポリエステル樹脂、ポリアセタール樹脂、ポリアミド樹脂、ポリアリレート樹脂等の所謂エンジニアリングプラスチックやアルミ板材や鉄板材等の金属板材等も使用できる。

【００１５】そして該面状発光板体１には発光源からの発光光線を漏出させずそれぞれの区画１Ａ内で反射させて面状光線となすうえから、多数の区画１Ａが形成されるもので該区画１Ａの形成容積としては発光光線の輝度や発光強度にもよるが、発光光線を減衰させることなく効率良く反射させて面状光線となしたうえ照射させるうえから、望ましくはその深さが略１．５乃至３．０ｃｍ程度及び縦並びに横の長さはそれぞれ略３．０乃至１０ｃｍ程度に形成される。

【００１６】かくしてなる区画１Ａの区画内壁面１Ｂには発光光線を外部漏出させることなく反射させて面状光線となすために、反射材１Ｃが積層され若しくは塗着されてなり且該反射材１Ｃの形成はアルミ箔やアルミ蒸着フィルム材を積層させ或いはアルミや亜鉛若しくは銀等を蒸着させることによりなされている。

【００１７】而して反射材１Ｃが形成された区画内壁面１Ｂの一側には、低電力で高輝度発光がなしえるＬＥＤ光源１０が設けられている。このＬＥＤ光源１０は近年各種のものが開発上市されているが、具体的なものとしてはＩｎＧａｎ系発光ダイオードチップと蛍光体とを組合せて樹脂モールドした光度３ｃｄ、効率５．０１ｍ／ｗ、出力１．５ｍＷ、色温度８０００Ｋ、色調（ｘ，ｙ）＝（０．２９，０．３０）のものが挙げられる。更にこのＬＥＤ光源１０からの発光光線は点光線であるから、該発光光線を漏出や減衰させることなく区画１Ａ内で反射させ面状光線となすうえから、該ＬＥＤ光源１０の下部位には調光板１１が適宜の勾配を以って形成されてなるもので、該調光板１１の具体的長さや勾配は使用されるＬＥＤ光源１０の大きさや光軸の広がり或いは区画１Ａの内壁面までの距離等により決定されるが、肝要なことはＬＥＤ光源１０からの発光光線が直接下方より逸散されぬよう調光させることにある。当然に該調光板１１の表裏面にも反射材１Ｃが積層若しくは塗着されている。

【００１８】ＬＥＤ光源１０が設けられる区画内壁面１Ｂと対向する区画内壁面１Ｂには、該ＬＥＤ光源からの発光光線を効率よく区画１Ａ内に積層若しくは塗着された反射材１Ｃに反射させて面状光線となすための反射促進板１２が設けられてなるもので、該反射促進板２Ｂは発光光線を区画１Ａ内全体に再反射させるよう反射曲面加工が施されてなるものである。

【００１９】かくしてそれぞれの区画１Ａ内で反射されることにより形成される面状光線は、該面状発光板体１の下方より照射させるものであるが、該照射される面状光線を更に均質化するため該面状発光板体１の下部には散乱透過若しくは再帰透過させて照射させる透過板材１３が接合されている。この透過板材１３は当然に耐久性、耐熱性、耐光性とともに透光性に優れる素材が用いられるもので、具体的にはガラス板材やアクリル樹脂、ポリカーボネート樹脂等からなる合成樹脂板材が好適である。加えて面状光線を散乱若しくは再帰させる今一つの理由は、照射させる面状光線にそれぞれの区画１Ａ相互の陰影が消去しえる程度に散乱透過若しくは再帰透過させることにあり、過度の散乱や再帰は面状光線の減衰化を招く結果となることに留意すべきである。

【００２０】散乱手段は多くの手段が提案されるが、安価な手段としては透過板材１３の一側面に微細な凹凸所謂梨地加工を施す方法や、希薄なアルミ蒸着加工を施す方法、或いは合成樹脂素材による場合にはガラス微粒子やアルミ粉体を分散混合させる手段が好都合であり、更に再帰手段としては合成樹脂素材からなる透光板材１３の一側面若しくは両側面にマイクロプリズム加工を施すことが提案できる。

【００２１】かかる構成により形成される面状発光板材１の上面には、該面状発光板材１に所要の時間、所要の電力を供給させるための蓄電体２が積層されている。この蓄電体２は刻々と変化する日照条件によってその発電に係る太陽光発電板体３による発生電力も著しく変動するものであるから、短時間に該発生電力を効果的に蓄電させる必要があり、且本発明は建物や施設の屋根や外壁面に直接張設せしめて使用することにより付帯する工事や設備費用の削減を図ることにもあるから、該蓄電体２には電気二重層キャパシタ２０が使用されるもので、且該電気二重層キャパシタ２０は可能な限り扁平薄肉状のものが好適であって、その厚さは最大でも３ｃｍ以下望ましくは１乃至２ｃｍ程度のものが好都合である。そしてかかる蓄電体２の蓄電容量は、出力負荷に相当する面状発光板体１におけるＬＥＤ光源１０の消費電力及び照射時間、所謂総電力を供給しえる蓄電容量に対処しえるよう適宜数の電気二重層キャパシタ２０が配設される。

【００２２】加えて該蓄電体２に重要なことは電気二重層キャパシタ２０による効率的な蓄電及び放電をなさしめるうえからは図３に示す如く、電気二重層キャパシタ２０の蓄電特性として蓄電入力電圧をその出力電力に比べて略４倍程度に昇圧入力させることが望ましいこと、及び出力負荷に伴う低電圧時の出力利用率を高めるうえから、蓄電入力側にはスイッチングコンバーターからなる昇圧コンバーター２１Ａ及び出力負荷側には降圧コン

バーター２１Ｂを介在させ、更には適宜数配設させるそれぞれの電気二重層キャパシタ２０のそれぞれに均等な蓄電と放電をなさしむるうえから、及び満充電時の発熱防止を図るうから、それぞれの電気二重層キャパシタ２０には並列モニター回路２２が並列に接続されている。かかる場合の該並列モニター回路２２は具体的蓄電特性に合せてダイオード並びにモノシリック集積回路で形成される。当然のことながら該蓄電体２の出力負荷側は面状発光板体１の入力側と接続されている。

【００２３】かかる如き構成よりなる蓄電体２の上面には、更に太陽光を受光して所要の電力を発電させるための太陽光発電板体３が積層されている。この太陽光発電板体３は太陽光を受光して起電力を発生する太陽電池セル３０を所要数結線させて所望の電力を発生しえる太陽電池モジュール３０Ａとして使用するものであるが、極めて脆弱で僅かな外力付加によっても容易に破損する問題を抱える。他方本発明においては該太陽光発電板体３は建物や施設等の屋根や外壁面に張設し付帯する工事や設備費用を削減するものであるから、実用使用に際しての温度変化や雨水、湿気等に対抗しえる耐久性や耐水性とともに外部衝撃の付加や飛来物の衝突等に対する耐衝撃性や強靭性を促進せしむることが必要となる。

【００２４】これがため該太陽光発電板体３は図４に示すように少なくともその上面が透光性素材からなる二枚の狭持板材３１、３１を用いるとともにその中間部位には太陽電池セル３０が所要数が結線されてなる太陽電池モジュール３０Ａが、透明アクリル樹脂嫌気性接着剤３２により、挟持板材３１相互と密封充填接着されて形成されている。この場合において挟持板材３１はガラス板材を初めアクリル樹脂板材やポリカボネート樹脂板材が通常用いられる。加えて挟持板材３１と太陽電池モジュール３０Ａとの接着に、透明アクリル樹脂嫌気性接着剤３２が用いられる所以は挟持板材３１と太陽電池モジュール３０Ａとに強固な接着性が発揮され、且該接着剤３２の注入固化に際しても硬化時間が比較的短かく、而も固化後の接着容積の減少所謂痩せが少なく均質安定した太陽光発電板体３が形成されることにある。

【００２５】かくして面状発光板体１の上面に蓄電体２が配設され更にその上面に太陽光発電板体３が配設されたうえ、これら全体を一体的に積層固定させるためにその周縁が枠体４により挟着されている。この枠体４は特段に制約はなくこれら面状発光体１、蓄電体２及び太陽光発電板体３を屋外条件下で長期に積層固定させるものであるから、使用素材としては鉄板材やアルミ板材が好適で且該枠体４は積層されるそれぞれの端縁が挟入されるよう通常断面がコ形状に形成されてなるものである。更にこの枠体４の挟着部分より雨水や湿気が浸入せぬよう防水接着剤等による耐水加工４Ａが施されてなるものである。

【００２６】本発明はかかる如き構成からなるものであるが、本発明では実用使用に広範に対処するうえから更に次の如き構成が配慮されている。即ち図５に示すように生産工場や倉庫、物置、ガレージ等においては、その建物や施設の特質上屋根や外壁等の躯体以外の内部空間で製造がなされ、製品や商品等が保管されるものであるから、本発明を屋根材の一部として張設させることで内部空間の照明がなされるものであるが、居住用建物を初め事務所や店舗建物等では図６に示すように躯体内が複雑多様に区画され、且この区画された天井に照明手段が施されるため太陽光を受光しえる屋根や外壁面より隔離された場所で照明がなされることとなる。

【００２７】そこで本発明においては面状発光板体１と蓄電体２とを枠体４により一体的に積層固定させたうえ照明の必要な場所に配設し、且建物や施設の屋根や外壁等に張設させる太陽光発電板体３の周縁にも枠体４を設け、而もその周縁に耐水加工４Ａを施し独立した太陽光発電板体３で発電した電力を一体的に積層されてなる蓄電体２に通電線４Ｂにより入力させる面状発光パネル材の構成、及び建物空間に更に高い照度の照明が要請される場合においては、面状発光板体１の区画１Ａ内の対称的二区画内壁面１Ｂ、１Ｂにそれぞれ ＬＥＤ光源１０を設けるとともに、該ＬＥＤ光源１０、１０からの発光光線を反射させ且下方に照射させる反射促進板１２、１２を形成させてなる面状発光パネル材の構成にある。

【００２８】

【発明の効果】本発明は以上の如く面状発光板体上面に扁平な蓄電体が、更にその上面には太陽光発電板体とが積層され且これらが枠体により一体的に積層固定され、而もその周縁に耐水加工が施されてなるから生産工場や倉庫、物置、ガレージ等においては屋根材として張設使用できるとともに照明もなしえ、且付帯工事や設備が削減されるため極めて安価に設置できる。更には面状発光板体と蓄電体とを枠体により一体的に積層固定させ、且太陽光発電板体に枠体を設け而もその周縁に耐水加工を施し独立使用することにより、該太陽光発電板体を屋根材や外壁材と使用できるとともに、その発電した電力を導電線により蓄電体に入力させることで建物や施設のあらゆる部分への照明が可能となる。そして屋外に曝露使用される太陽光発電板体は強靭で耐久性を保持する二枚の挟持板材が用いられ、且その中間には太陽電池モジュールが透明アクリル樹脂嫌気性接着剤により密封充填接着されてなるため、外部付加力や飛来物の衝突に際しても十分に対抗し太陽電池モジュールが安全に保護され、且耐水加工により雨水や湿気の侵入も防止され長期に亘って故障やトラブルの発生も防止される。加えて日照変化が激しく且発電電力も変動する太陽光発電においても、電気二重層キャパシタを用いその入力側にはスイッチングコンバーターよりなる昇圧コンバーター及び出力側には降圧コンバーターが設けられ、而も電気二重層キャパシタのそれぞれには並列モニター回路が並列に接続

されてなるから、短時間に効率良く蓄電がなされるため長時間に亘って安定した電力供給がなされる。そして該蓄電体からの出力負荷はＬＥＤ光源を発光させるのみであるから極めて消費電力が少なく、且該ＬＥＤ光源からの発光光線が多数の区画内で反射され面状光線とされたうえ、更に散乱若しくは再帰透過板材を透過させて照射されるため、建物空間全体が均等な照度を以って照明され照明効果が著しく高められる等、優れた多くの特長を具備する面状発光パネル材である。

【図面の簡単な説明】

【図１】本発明の断面説明図である。

【図２】面状発光板体の部分拡大説明図である。

【図３】本発明のブロック図である。

【図４】本発明の見取図である。

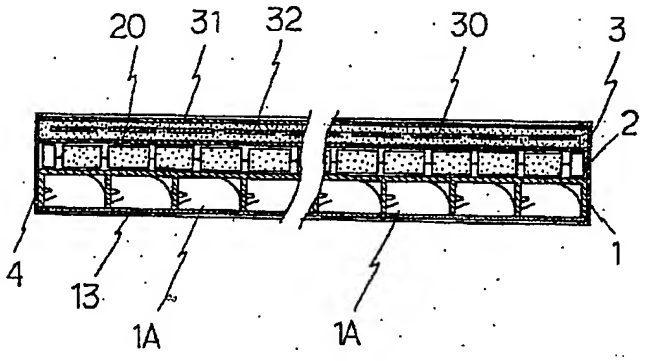
【図５】本発明の使用態様図である。

【図６】太陽光発電板体が独立した本発明の使用態様図である。

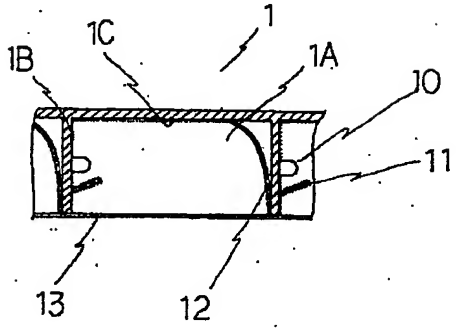
【符号の説明】

1　面状発光板体
1A　区画
1B　区画内壁面
1C　反射材
10　ＬＥＤ光源
11　調光板
12　反射促進板
13　透過板材
2　蓄電体
20　電気二重層キャパシタ
21A　昇圧コンバーター
21B　降圧コンバーター
22　並列モニター回路
3　太陽光発電板体
30　太陽電池セル
30A　太陽電池モジュール
31　挟持板材
32　透明アクリル樹脂嫌気性接着剤
4　枠体
4A　耐水加工
4B　通電線

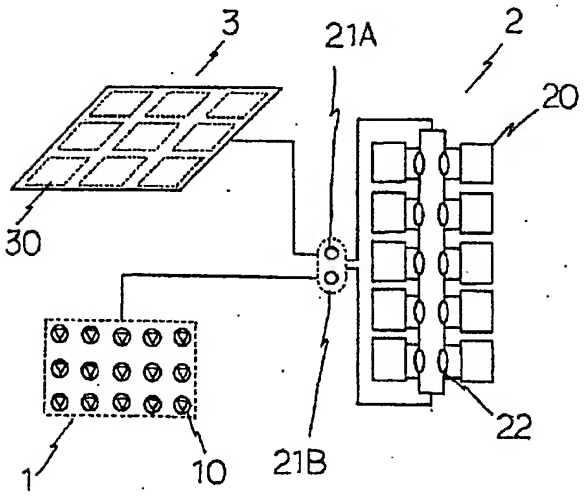
【図1】



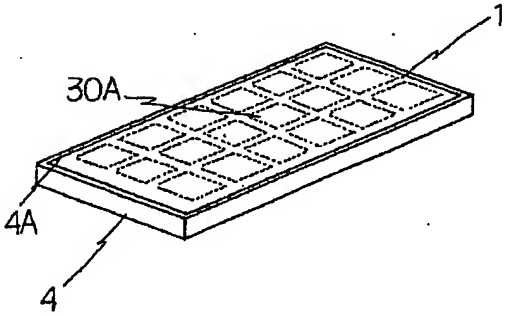
【図2】



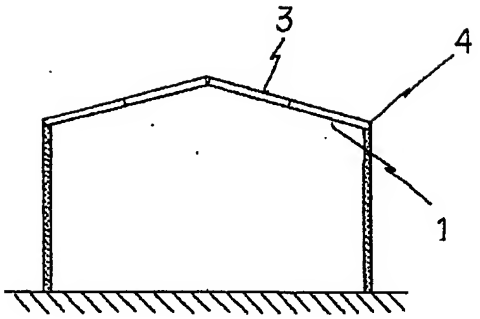
【図3】



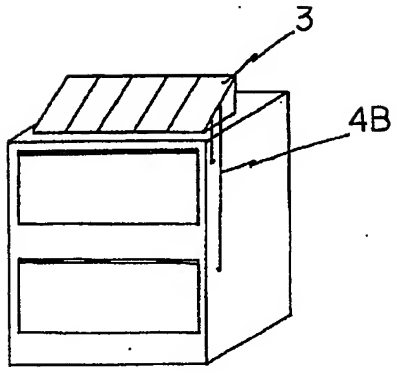
【図4】



【図5】



【図6】



フロントページの続き

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* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
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3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] it has the partition of a large number formed in the space volume predetermined for a non-translucency material, and a laminating is carried out by the reflector with this proper partition internal surface, or it plasters -- having -- **, while coming to prepare the LED light source in the 1 side of the partition wall A modulated light plate is formed. the beam of light of this LED light source is once reflected by the partition internal surface -- as -- about the lower part of the LED light source -- suitably -- inclination -- with -- **** -- the reflex facilitation plate with which ** also makes an opposite partition wall surface re-reflect a beam of light, and aims at a lower part exposure forms -- having -- **** -- ** -- with the field-like luminescence board to which it comes to join the transparency plate which penetrates [dispersion-] or penetrates [recursive-] the beam of light irradiated from each partition So that the accumulation-of-electricity capacity which can carry out the luminescence exposure of the duration this field-like luminescence board may be held in the top face of this field-like luminescence board A juxtaposition monitor circuit minds [each / electric double layer]. a flat-like electric double layer capacitor carries out number arrangement suitably -- having -- ** -- The accumulation-of-electricity object with which a switching converter comes to also mind ** for the input side for the accumulation of electricity from a field-like luminescence board, and discharge, furthermore, at least to the pars intermedia of the **** plate of two sheets where a front-face side becomes the top face of this accumulation-of-electricity object from a translucency material at least the photovoltaics board by which seal restoration adhesion of the solar cell module with which required-number array connection of the photovoltaic cell was carried out was carried out with the **** plate with transparence acrylic resin anaerobic adhesive carries out laminating immobilization in one with a frame suitably -- having -- ** -- the field-like luminescence panel material characterized by coming to give waterproof processing to the periphery.
[Claim 2] Field-like luminescence panel material according to claim 1 to which it comes to give waterproof processing after coming to carry out laminating immobilization of a field-like luminescence board and the accumulation-of-electricity object with a frame in one and preparing a frame in the periphery of the electroplax object from ********.
[Claim 3] Claim 1 to which it comes to form the reflex facilitation plate which the LED light source is prepared in the symmetrical 2 partition internal surface in the partition of a field-like luminescence board, respectively, is made to reflect the luminescence beam of light from the LED light source of ******, and carries out a lower part exposure, respectively, or field-like luminescence panel material according to claim 2.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] the necessary lighting space after making this invention store electricity the power generated with the solar cell module efficiently -- doubling -- proper -- it can arrange -- ** -- a homogeneous illuminance -- with -- **** -- it is related with the field-like luminescence panel material which lighting can make.
[0002]
[Description of the Prior Art] An industrial activity is indispensable energy with very important power also in life activities from the first. The consumption is also rising in the huge amount with improvement in a living standard at the expansion list of an industrial scale. The grope of alternative energy is conjointly made for expansion of the environmental pollution by the soot and exhaust gas which are discharged with the use etc. from early. already -- the -- primary energy -- coal and petroleum -- setting -- the resource exhaustion and ** -- Although substituted for the part to nuclear energy, as for conversion to nuclear energy, are apprehensive about the safety. resulting in a catastrophe, once accident occurs is inevitable, and it has the un-**** problem that it is plentiful for reservation of safety, in ****** our country -- the accident with which it is alike often, continue also in ******, and catastrophes are expected to be has occurred frequently.
[0003] Especially in addition to the technical issue, the wave power generation using the wave force of the wind power which used wind-force energy for the solar battery by solar light energy use at first as a future energy secured means in another side, or the ocean etc. still has the problem of economical efficiency, although research has been made for many years. The solar battery which especially used solar light energy Many technical issues are being conjointly solved for the remarkable improvement in semiconductor technology or a ceramic technique. This accumulates and it follows on a promotion policy for the promotion of use of natural energy about the solar battery and photovoltaics by solar light energy use. Although photovoltaics equipment was spreading as the industrial purpose and a habitation purpose, many problems were still held in economical efficiency, and this has checked full-scale spread.
[0004] Since electromotive force generating of a photovoltaic cell or a module changes with sunshine degrees a lot as a result of an artificer's repeating research wholeheartedly in view of this problem Sufficient power with which lighting can be presented if the accumulation-of-electricity equipment which can store electricity immediately is not used at the time of generating of big electromotive force cannot be supplied. therefore, excessive accumulation-of-electricity equipment must be installed -- it is necessary to make electromotive [about things and covering long duration], and accumulation of electricity -- Since the photovoltaic cell or module applied to photovoltaics when adopting the power plant by **** solar light energy is very brittle This cel and a module need to protect a ** external impact in a sunshine location, need to set up the solar cell module box which comes to give ********, and it is necessary to make them arrange it in the interior, and they are in the actual condition forced what also has still more expensive incidental construction costs, such as wiring, and installation cost to the installation of lighting fitting.
[0005] Furthermore, since the present lighting means is point luminescence and line luminescence like a fluorescent lamp with an electric bulb chiefly and the illuminance in building space falls at a squared rate with the distance from point luminescence or line luminescence, Like today, from the top of the proper illuminance on actuation of the information equipment which it comes to use abundantly on industry at a life top, it is becoming a big problem and the lighting means according to field luminescence for this accumulating is searched for strongly.
[0006] Then, by an artificer's making the seal restoration adhesion of a photovoltaic cell or the module carry out in the middle of the pinching plate of two sheets when at least one side has translucency with transparence adhesives, and considering as a photovoltaics board shock resistance and a water resisting property hold -- having -- exposure use on the outdoors -- it can do -- ** -- accumulation of electricity of large capacity [** / ** / short] thin on the whole is attained by arranging many flat electric double layer capacitors -- And by using an LED lamp for the light source, making it reflect in much partitions, and carrying out ******(ing) or recursive transparency, the thing in which lighting

vith a field beam of light is possible was studied, and it resulted in this invention.
0007]
Problem(s) to be Solved by the Invention] That is, it is to offer the field-like luminescence panel material which can over a long time and can illuminate a building and facility space with a homogeneous illuminance while roofs and outer walls, such as a building and a facility, are made to stretch this invention directly and it makes sufficient accumulation of electricity for short ** make.
0008]
Means for Solving the Problem] In order to solve an above-mentioned technical problem, the unified configuration whose lighting short ** is stored electricity and can make as ********** the power generated by sunlight is demanded. Then, it is a thing using the configuration of a field-like luminescence board as a lighting means in this invention. In order for this field-like luminescence board to use the LED light source of low power quantity brightness as the light source, to reflect the luminescence beam of light from this LED light source in a necessary partition and to make it with a sheet-like light line Much partitions where a whole configuration has the partition volume of ****** by the shape of thin form flat using a non-translucency material are made to form. In order to reflect the luminescence beam of light from the LED light source in this partition internal surface and to make with a sheet-like light line, while carrying out the laminating of the proper reflector or making it plaster the LED light source of this partition wall which becomes one side face from an LED lamp is established, and the fly off of the luminescence beam of light of the ** LED light source is not carried out to the method of the outside of direct, respectively -- as -- inclination proper in the lower part of this LED light source -- with -- **** -- the modulated light plate is formed. In addition, the reflex facilitation plate for re-reflecting efficiently the luminescence beam of light from the LED light source is formed in the opposite side of the partition wall surface in which this LED light source was prepared. Furthermore, after making it reflect with a partition wall or a reflex facilitation plate and making the beam of light made to emit light by the LED light source form into a sheet-like light line, light scattering or the transparency plate which carries out recursive transparency is joined to the inferior surface of tongue, and the field-like luminescence board consists of from [in scattering about or recursive penetrating this sheet-like light line and aiming at homogeneous lighting].
0009] And the generation-of-electrical-energy force of the whole being formed in the top face of this field-like luminescence board in the shape of light-gage ****, and changing with sunlight notably is fully stored electricity in a short time. the electric double layer capacitor for making lighting lighting make [necessary time amount] carries out required-number arrangement of this field-like luminescence board -- having -- becoming -- ** -- to each of this electric double layer capacitor by which required-number arrangement is carried out, so that accumulation of electricity may be made equally, respectively The pressure-up converter which consists of a switching converter is formed also to ** in a juxtaposition monitor circuit by each electric double layer capacitor through a pressure-lowering converter at ******* at the input side, respectively, and the accumulation-of-electricity object is constituted.
0010] In addition, while making the top face of this accumulation-of-electricity object generate necessary electromotive force by sunrays and light-receiving and making an accumulation-of-electricity object supply power, the photovoltaics plate holding the protection of a solar cell module, the durable usability in an outdoor exposure, and the water resisting property by the external impact is arranged. This photovoltaics plate consists of a configuration of carrying out seal restoration adhesion of mutual for the solar cell module to which at least the pars intermedia of the pinching plate of two sheets which used the translucency material for that front face at least was made carrying out required-number array connection of the photovoltaic cell using transparence acrylic resin anaerobic adhesive.
0011] an accumulation-of-electricity object arranges in a field-like luminescence board top face in this way -- having -- ** -- by making the periphery section by which the photovoltaics board was arranged in the top face fasten with a frame, laminating immobilization of these is carried out in one -- making -- ** -- it is considering as the configuration which performed waterproof processing to the periphery. Furthermore, since they are what is formed in the interior of the building distant from the roof and the outer wall of a building, lighting facilities, such as lighting of a general habitation building, and an office, a store building, carry out the laminating immobilization of a field-like luminescence board and the accumulation-of-electricity object in one with a frame, make a frame form in the periphery of the electroplax object from ********, and are making from from [in coping with this lighting] with the configuration that ** also performed waterproof processing to the periphery, and made it become independent. In addition, from from [in coping with the lighting of a high illuminance in this invention], the configuration which established the LED light source, respectively is used for contrastive 2 wall surfaces of the partition wall of a field-like luminescence board.
0012]
Function] Since this invention comes to use the configuration like ****, it has the following operations. that is, a field-like luminescence board, an accumulation-of-electricity object, and a photovoltaics plate carry out laminating immobilization of this invention in one -- having -- ** -- since it comes to be formed in the periphery in the shape of

[to which waterproof processing was performed] a flat panel, and direct use can be carried out as roofing in works, a warehouse, a lumber room, a garage, and a temporary building and lighting is made from the field-like luminescence board of ******, incidental electric installation, construction, etc. are reduced entirely. and the photovoltaics board by the side of a front face -- tough -- the pinching plate of two sheets at least with transparent ** one side -- using -- the mid-position -- a solar cell module -- transparence acrylic resin anaerobic adhesive -- with -- **** -- since seal restoration adhesion of mutual is carried out, it becomes very firm, and even if it faces a rainstorm and a hailstorm the collision of a missile etc. from the first, while a solar cell module is protected certainly, invasion of moisture or storm sewage is also prevented. In addition, even if a sunshine condition changes intricately, many electric double layer capacitors are arranged. The pressure-up converter which consists of a switching converter minds [of a **** electric double layer capacitor], and to ******** coming [a pressure-lowering converter] On the occasion of accumulation of electricity, accumulation of electricity and discharge with work good [an operation of a current input pump and a current-output pump] can make. since it comes to also prepare ** a juxtaposition monitor circuit in each electric double layer capacitor -- very -- the inside of a short time -- the inside of each electric double layer capacitor -- homogeneity -- ** -- accumulation of electricity will be made efficiently.

[0013] Or it is plastered. in addition, the partition internal surface by which the field-like luminescence board used as the output load was divided by a large number -- a reflector -- a laminating -- Since it comes to prepare the ** LED light source, while luminescence of the high brightness in smallness power is made, it is intricately reflected by a modulated light plate and the reflex facilitation plate by the partition internal surface, and becomes a sheet-like light line. Since this sheet-like light line is scattered about or recursive penetrated and ** is also irradiated, shading between partition walls is eliminated, and lighting is made with an illuminance with the whole equal building space. furthermore, in this invention, a field-like luminescence board and an accumulation-of-electricity object unify -- having -- the electroplax object from ******** -- becoming independent -- as roofing or outer wall material -- it can be used -- ** -- the lighting of all the locations in a building can also be made by making the electromotive force store electricity an accumulation-of-electricity object by the energization line.

[0014]

[Example] if this invention example is explained with drawing below at a detail -- drawing 1 -- the cross-section explanatory view of this invention, and drawing 2 -- the partial expansion explanatory view of a field-like luminescence board -- it is -- the field-like luminescence board 1 -- space, such as a building and a facility, -- a necessary illuminance -- with -- **** -- it is for illuminating and stretches directly in roofs and outer walls, such as a building and a facility, in more detail -- making -- generating electricity -- the inside of ****** -- a homogeneous illuminance -- with -- **** -- it is shown in aiming at lighting. A non-translucency material [from / in making it reflect without making the luminescence beam of light from the source of luminescence leak within partition 1A formed and making / thermal resistance / toughness, lightweight nature, or / with a sheet-like light line as a material used for this to accumulate] is desirable, and can use metal plates, such as the so-called engineering plastics and aluminum plates, such as polycarbonate resin, polyester resin, polyacetal resin, polyamide resin, and polyarylate resin, and an iron plate, etc. as a concrete material. [much]

[0015] And although much partition 1A is formed and it is based also on the brightness and luminescence reinforcement of a luminescence beam of light as formation volume of this partition 1A from from [in not making this field-like luminescence board 1 leak the luminescence beam of light from the source of luminescence, but making it reflect within each partition 1A and making with a sheet-like light line] From in [making it irradiate after making it reflect efficiently and making with a sheet-like light line, without attenuating a luminescence beam of light], as for the horizontal die length, the depth is desirably formed in abbreviation 3.0 thru/or about 10cm at abbreviation 1.5 thru/or about 3.0cm, and a vertical list, respectively.

[0016] In order to make it reflect, without making partition internal-surface 1B of partition 1A which becomes in this way carry out external exsorption of the luminescence beam of light and to make with a sheet-like light line, it is made by carrying out the laminating of reflector 1C, or coming to be plastered, and formation of **** reflector 1C carrying out the laminating of aluminum foil or the aluminum vacuum evaporationo film material, or making aluminum, zinc or silver, etc. vapor-deposit.

[0017] The LED light source 10 which high brightness luminescence can make with low power is formed in the 1 side of partition internal-surface 1B in which it **(ed) and reflector 1C was formed. Although development Kamiichi of the thing of recent-years various kinds [light source / 10 / this / LED] is carried out, the thing of the luminous intensity of 3 cds which carried out resin mold combining the InGan system light emitting diode chip and the fluorescent substance as a concrete thing, effectiveness 5.01 m/w, the output of 1.5mW, color temperature 8000K, and color tone (x y) = (0. 29 0.30) is mentioned. furthermore, the luminescence beam of light from this LED light source 10 from since it is a point beam of light, in [without leaking and attenuating this luminescence beam of light, making it reflect within

partition 1A and making with a sheet-like light line] inclination with the modulated light plate 11 proper in the lower part of this LED light source 10 -- with -- ****, although it comes to be formed and the concrete die length and the inclination of this modulated light plate 11 are determined by the magnitude of the LED light source 10 used, the distance to the breadth of an optical axis, or the internal surface of partition 1A, etc. An important thing is in making the light modulate so that the fly off of the luminescence beam of light from the LED light source 10 may not be carried out from a direct lower part. natural -- the front rear face of this modulated light plate 11 -- reflector 1C -- a laminating -- or it is plastered.

[0018] Come to prepare the reflex-facilitation plate 12 for making a laminating or applied reflector 1C reflect efficiently the luminescence beam of light from this LED light source in partition 1A, and making with a sheet-like-light line, and reflective curved-surface processing is performed and this reflex-facilitation plate 2B turns into partition internal-surface 1B in which the LED light source 10 is formed, and the partition internal-surface 1B which counters so that a luminescence beam of light may be re-reflected in [whole] partition 1A.

[0019] Although the sheet-like light line formed by being reflected within each partition 1A in this way is made to irradiate from the lower part of this field-like luminescence board 1, in order to homogenize the sheet-like light line this irradiated further, the transparency plate 13 which is made to dispersion-penetrate or recursive penetrate and is made to irradiate is joined to the lower part of this field-like luminescence board 1. The synthetic-resin plate which the material which is naturally excellent in translucency with endurance, thermal resistance, and lightfastness is used, and specifically consists of glass plate material, acrylic resin, polycarbonate resin, etc. is suitable for this transparency plate 13. In addition, it is in dispersion or more reason for carrying out recurrence making extent which each shading between partition 1A can eliminate on the sheet-like light line by which exposure ** is carried out dispersion-penetrate or recursive penetrate a sheet-like light line, and should care about that too much dispersion and recurrence result in causing attenuation-ization of a sheet-like light line.

[0020] Although many means are proposed, when a dispersion means is based on the approach of performing concave convex place ****** processing detailed on one side face of the transparency plate 13 as a cheap means, the method of performing thin aluminum vacuum-evaporationo processing, or a synthetic-resin material, a means carry out distributed mixing of glass particles or the aluminum fine particles is convenient, and it can propose performing micro prism processing to one side face or the both-sides side of translucent plate material 13 which consists of a synthetic-resin material as a recursive means further.

[0021] The laminating of the accumulation-of-electricity object 2 for making necessary time amount and necessary power supply to this field-like luminescence plate 1 is carried out to the top face of the field-like luminescence plate 1 formed of this configuration. Since the generating power by the photovoltaics board 3 applied to that generation of electrical energy according to the sunshine condition which changes every moment is also changed remarkably, this accumulation-of-electricity object 2 Since it is shown also in aiming at construction which attaches by using it, making this generating power store electricity for a short time effectively, and making the roof and skin of a building or a facility stretch ******** directly, and reduction of facility costs The electric double layer capacitor 20 is used for this accumulation-of-electricity object 2, a flat thin meat-like thing is suitable as much as possible, and the thickness has 1 thru/or an about 2cm thing desirably convenient [the **** electric double layer capacitor 20] 3cm or less at the maximum. And the electric double layer capacitor 20 of a number is suitably arranged so that the accumulation-of-electricity capacity of this accumulation-of-electricity object 2 can cope with the accumulation-of-electricity capacity which can supply the power consumption of the LED light source 10 in the field-like luminescence board 1 equivalent to an output load and irradiation time, and the so-called total power.

[0022] In addition, from from [in making the efficient accumulation of electricity and the discharge by the electric double layer capacitor 20 make], as shown in drawing 3 , that it is important for this accumulation-of-electricity object 2 It is desirable to make about 4-time abbreviation carry out the pressure-up input of the accumulation-of-electricity input voltage compared with the output power as an accumulation-of-electricity property of the electric double layer capacitor 20, And pressure-lowering converter 21B is made to be placed between pressure-up converter 21A [which becomes an accumulation-of-electricity input side from a switching converter], and output load sides from from [in raising the output utilization factor at the time of the low battery accompanying an output load]. furthermore, each electric double layer capacitor 20 which carries out number arrangement suitably is alike, respectively, and there is nothing about equal accumulation of electricity and discharge -- carrying out -- **** -- since exoergic prevention at a top to the time of a full charge can be aimed at, the juxtaposition monitor circuit 22 is connected to each electric double layer capacitor 20 at juxtaposition. This juxtaposition monitor circuit 22 in this case is formed in a diode list by the monolithic integrated circuit according to a concrete accumulation-of-electricity property. The output load side of this accumulation-of-electricity object 2 is connected with the input side of the field-like luminescence board 1 with the natural thing.

[0023] The laminating of the photovoltaics board 3 for receiving sunlight in the top face of the accumulation-of-electricity object 2 which consists of this **** configuration further, and making it generate necessary power is carried out. Although this photovoltaics board 3 is used as solar cell module 30A which is made to carry out required-number connection of the photovoltaic cell 30 which receives sunlight and generates electromotive force, and may generate desired power, it has the problem easily damaged also by very brittle and slight external force addition. shock resistance and toughness -- ********** -- things are needed. [as opposed to addition of an external impact, the collision of a missile, etc. in the endurance or the water resisting property which can oppose the temperature change for practical use use, storm sewage, moisture, etc. since this photovoltaics board 3 reduces the construction and facility costs which stretch and attach to roofs and skins, such as a building and a facility, in another side this invention]

[0024] This accumulates, seal restoration adhesion of the solar cell module 30A to which it comes to carry out a photovoltaic cell 30 connection of the required number is carried out with both pinching plate 31 by the transparence acrylic resin anaerobic adhesive 32, and this photovoltaics board 3 is formed in the pars intermedia while it uses the **** plates 31 and 31 of two sheets which the top face becomes from a translucency material at least, as shown in drawing 4 . In this case, as for the pinching plate 31, an acrylic resin plate and the poly KABONETO resin plate are usually used at first in glass plate material. In addition, even if a firm adhesive property is demonstrated by the pinching plate 31 and solar cell module 30A and it faces [impregnation solidification of the **** adhesives 32] the reason by which the transparence acrylic resin anaerobic adhesive 32 is used for adhesion with the pinching plate 31 and solar cell module 30A, it is in the photovoltaics board 3 there are little short **** and reduction ******** of the adhesion volume after also solidifying **, and the setting time carried out [the board] homogeneity stability comparatively being formed.

[0025] After the accumulation-of-electricity object 2 was arranged in the top face of the field-like luminescence board 1 in this way and the photovoltaics board 3 is further arranged in the top face, in order to carry out laminating immobilization of these whole in one, the periphery is fastened with the frame 4. Since there is no constraint of this four frame in special and a long period of time is made to carry out laminating immobilization of the these field-like emitter 1, the accumulation-of-electricity object 2, and the photovoltaics board 3 under outdoor conditions, as a use material, an iron plate and an aluminum plate are suitable, as for the **** frame 4, a cross section is formed in a KO configuration and each edge by which a laminating is carried out usually becomes so that may be inserted. Furthermore, it comes to give waterproof processing 4A by waterproof adhesive etc. so that neither storm sewage nor moisture may permeate from the fastening part of this frame 4.

[0026] Although this invention consists of this **** configuration, in this invention, it is further considered in the configuration like a degree from in [coping with practical use use extensively]. Namely, as shown in drawing 5 , it sets at production works, a warehouse, a lumber room, a garage, etc. the special feature of the building and facility -- a transit shed -- manufacture should do in building envelopes other than the main part of a root, an outer wall, etc., although the lighting of a building envelope is made by making this invention stretch as some roofing since a product, goods, etc. are kept at first, as shown in drawing 6 , the inside of a main part divides the building for habitation intricately variously in an office or a store building -- having -- ** -- since a lighting means is given to this divided head lining, lighting will be made in the location isolated from the roof which can receive sunlight, or the skin.

[0027] Then, after carrying out laminating immobilization of the field-like luminescence board 1 and the accumulation-of-electricity object 2 in one with a frame 4 in this invention, it arranges in the required location of lighting. A frame 4 is formed also in the periphery of the photovoltaics board 3 which a roof, an outer wall, etc. of ****** or a facility are made to stretch. The configuration of the field-like luminescence panel material which makes the power generated with the photovoltaics board 3 with which ** also gave waterproof processing 4A to the periphery, and became independent to it input into the accumulation-of-electricity object 2 which comes to carry out a laminating in one by energization line 4B, And when the lighting of a still higher illuminance is requested from building space, it sets. while forming the LED light source 10 in the symmetrical 2 partition internal surfaces 1B and 1B in partition 1A of the field-like luminescence board 1, respectively, the luminescence beam of light from these LED light sources 10 and 10 is reflected -- making -- ** -- it is in the configuration of the field-like luminescence panel material to which it makes it come to form the reflex facilitation plates 12 and 12 made to irradiate caudad.

[0028]

[Effect of the Invention] The laminating of the photovoltaics board is further carried out for an accumulation-of-electricity object flat on the field-like luminescence board top face like the above to the top face, laminating immobilization of the ******** is carried out in one with a frame, and since lighting can also be made and ********** and facilities are reduced while being able to carry out set-up use as roofing at production works, a warehouse, a lumber room, a garage, etc., since it comes to give waterproof processing to the periphery, ** can also install this invention very cheaply. Furthermore, when laminating immobilization of a field-like luminescence board

and the accumulation-of-electricity object is carried out in one with a frame, a frame is prepared in the electroplax object from ******** and ** also performs and carries out independent use of the waterproof processing in the periphery, while being able to use this photovoltaics board with roofing and outer wall material, the lighting to all the parts of a building or a facility is attained by making the generated power input into an accumulation-of-electricity object by the electric conduction line. and the pinching plate of two sheets it is tough and hold endurance uses in the photovoltaics board by which exposure use is carried out on the outdoors -- having -- ** -- even if it faces the collision of the external addition force or a missile, it fully opposes, and a solar cell module is protected by insurance, invasion of storm sewage or moisture is also prevented by ****** processing, since it comes to carry out seal restoration adhesion of the solar cell module by transparence acrylic-resin anaerobic adhesive in the middle, it continues at a long period of time, and failure and generating of a trouble are also prevented. In addition, a pressure-lowering converter is formed in the pressure-up converter and output side by which sunshine change becomes the input side from a switching converter also in the photovoltaics to which ********** is also changed violently using an electric double layer capacitor, and since it comes to also connect ** a juxtaposition monitor circuit to juxtaposition at each of an electric double layer capacitor, since accumulation of electricity is made, the electric power supply stabilized [long duration] is efficiently made for a short time. And since it is only making the LED light source emit light, the output load from this accumulation-of-electricity object has very little power consumption. Since dispersion or a recursive transparency plate is made to penetrate further and it irradiates, after being reflected in much partitions and making the luminescence beam of light from the **** LED light source into a sheet-like light line, an illuminance with the whole equal building space -- with -- **** -- it is the field-like luminescence panel material possessing many outstanding features -- it is illuminated and a light effect is heightened remarkably.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the cross-section explanatory view of this invention.
[Drawing 2] It is the partial expansion explanatory view of a field-like luminescence board.
[Drawing 3] It is the block diagram of this invention.
[Drawing 4] It is sketch drawing of this invention.
[Drawing 5] It is the use mode Fig. of this invention.
[Drawing 6] It is the use mode Fig. of this invention where the photovoltaics board became independent.
[Description of Notations]
1 Field-like Luminescence Board
1A Partition
1B Partition internal surface
1C Reflector
10 LED Light Source
11 Modulated Light Plate
12 Reflex Facilitation Plate
13 Transparency Plate
2 Accumulation-of-Electricity Object
20 Electric Double Layer Capacitor
21A Pressure-up converter
21B Pressure-lowering converter
22 Juxtaposition Monitor Circuit
3 Photovoltaics Board
30 Photovoltaic Cell
30A Solar cell module
31 Pinching Plate
32 Transparence Acrylic Resin Anaerobic Adhesive
4 Frame
4A Waterproof processing
4B Energization line

[Translation done.]

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